We claim:

1. A method for determining degradation in an emission control system coupled to an internal combustion engine having an emission control device coupled downstream of the engine, the method comprising:

providing an output signal of a sensor coupled downstream of the emission control device, said output signal indicative of an exhaust gas constituent flowing through the emission control system;

generating an estimate of said exhaust gas constituent based at least on an engine operating condition; and

indicating when said estimate of said exhaust gas constituent and said second quantity differ by a predetermined value.

2. The method recited in Claim 1 wherein said indicating further comprises indicating when said estimate of said exhaust gas constituent and said second quantity differ by said predetermined value for a pre-selected time.

3. The method recited in Claim 2 wherein said exhaust gas constituent is a NOx concentration.

4. The method recited in Claim 2 wherein said generating further comprises generating said estimate based at least on an engine out NOx concentration.

5. The method recited in Claim 4 wherein said generating further comprises generating said estimate based at least on an exhaust air-fuel ratio.

6. The method recited in Claim 5 where said generating further comprises taking into consideration efficiency of the emission control device.

7. The method recited in Claim 6 wherein said emission control device is a NOx trap.

8. The method recited in Claim 6 further comprising taking into account temperature of the emission control device.

9. A method for determining degradation in an emission control system coupled to an internal combustion engine comprising:

providing first and second signals from a sensor coupled downstream of the engine, said first output signal and said second output signal respectively indicative of a first exhaust gas constituent flowing through the emission control system and a second exhaust gas constituent flowing through the emission control system;

generating an estimate of said second exhaust gas constituent based at least on said first exhaust gas constituent and an engine operating condition; and

indicating when said estimate of said second exhaust gas constituent and said second exhaust gas constituent differ by a predetermined value.

10. The method recited in Claim 9 wherein said indicating further comprises indicating when said estimate of said exhaust gas constituent and said second quantity differ by said predetermined value for a pre-selected time.

11. The method recited in Claim 10 wherein said exhaust gas constituent is a NOx concentration.

12. The method recited in Claim 11 wherein said generating further comprises generating said estimate based at least on an engine out NOx concentration.

13. The method recited in Claim 12 wherein said generating further comprises generating said estimate based at least on an exhaust air-fuel ratio.

14. The method recited in Claim 13 where said generating further comprises taking into consideration efficiency of the emission control device.

15. The method recited in Claim 14 wherein said emission control device is a NOx trap.

16. The method recited in Claim 15 further comprising taking into account temperature of the emission control device.

17. An article of manufacture, comprising:

a computer storage medium having a computer program encoded therein method for determining degradation in an emission control system coupled to an internal combustion engine, said computer storage medium comprising:

code for providing first and second signals from a sensor coupled downstream of the engine, said first output signal and said second output signal respectively indicative of a NOx concentration and an air-fuel ratio flowing through the emission control system;

code for generating an estimate of said NOx concentration based at least on said air-fuel ratio and an engine operating condition; and

code for indicating when said estimate and said air-fuel ratio differ by a predetermined value for a preselected duration.